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THE JOURNAL OF PHILOSOPHY

PHILOSOPHY OF SCIENCE AND THE REVIVAL OF CLASSICAL ONTOLOGY

1. THE VALUE OF AN EXTERNAL PERSPECTIVE

PHILOSOPHY of science has far and away the greatest claim to be called the only really new philosophical movement of our century. Yet from time to time every new philosophical movement needs to submit itself to analysis from the outside. Philosophical advance occurs when new modes of procedure, revised conceptual terms, and newly devised distinctions are found by some group to be profitable and fruitful as a philosophical perspective. Discovering that traditional problems yield to the attack of such regrouped forces, those who advocate some new approach (such as recent philosophy of science) become rightly enthusiastic and attempt to treat as many philosophical problems as possible within their new framework. However, carried away by the desire to display the merits of the new approach, they have an unfortunate tendency to forget that all philosophy past and present has not been like this. When this happens, then the ability is lost to stand outside the novel terminology and admit that it is possible to approach philosophy from different entries and with other conceptual tools. Since historically no single movement has ever taken all of philosophy into itself, what happens is that eventually any new doctrine must instead be taken into the general stream of philosophy and be given a place along side other developments, each of which was new in its own day. In order to speed this process of assimilation, it is valuable from time to time to receive a picture of how a new movement appears as a whole to someone who is outside the band of discoverers and disciples.

It is true, of course, that Hegel is notorious for trying to do the opposite of this, namely to take all the rest of philosophy up into his own perspective and to deny it an existence any longer outside of the Hegelian system. It is generally agreed that this ambitious project failed, and yet it seems that the Hegelian lack of generosity toward other philosophical perspectives is very much

with us today. It is unique to Hegel that he seems incapable of conceiving of the possibility that his own system might represent a wrong approach, and some philosophers today seem guilty of this Hegelian pride. When one encounters so many who cannot discuss philosophy sincerely with anyone whose approach is different from their own, one is forced to ask whether or not philosophy is passing through an unphilosophical period. "Unphilosophical" is here taken in its literal meaning, since traditionally "philosophy" has indicated that its followers were simply *seekers* of wisdom, whereas the current lack of flexibility regarding basic perspectives would seem to indicate that many today claim to *possess* wisdom as their exclusive property.

2. The New Respectability of Abstractions and Speculation

For all his historical importance, Francis Bacon means little to current work in science, which indicates the general agreement today that science has long since abandoned its strict empirical-data days. Some early Positivism tried to return to the original simple notion that all science could be based on direct experience, but science itself moved so rapidly away from direct empirical work that such an uncomplicated view could not long be adequate. What once were called abstract entities or non-sensory data are today readily accepted under the name "formal," introduced via mathematics and logic. Physics was the leader in the return to respectability of abstract entities, since its newer developments were to a considerable extent the product of highly abstract speculation, rather than empirical experimentation. Theoretical physics placed theory once again near the heart of science, since as Planck says, "it replaces the sense world . . . by another world, the world picture of physics, which is a conceptual structure. . . ."[1] In such a case, the physicist becomes much like Socrates in the *Theaetetus*, who found the sense world insufficient to answer theoretical questions. Physics is the epitome of scientific respectability, so that if it says that it needs to treat as real conceptual worlds other than the actual sense world, abstractness cannot remain a term of abuse, and strict empiricism becomes inadequate.

If this is true and accepted, why did not everyone hail the rebirth of ontological interest? My thesis here is that this silence is to be explained by the absence of classical ontology after the time of Kant. For Kant had denied reason's ability to speculate directly about the nature and structure of things, so that what was left after Kant was epistemology, that is, an indirect approach to

[1] Planck, Max, "The Concept of Causality in Physics," in *Readings in Philosophy of Science*, ed. by Wiener (New York, Scribner, 1953), p. 79.

certain fundamental Kantian problems through a self-examination of reason. The mind could not pass out directly to and beyond the world, on Kant's view, so that when physicists forgot this limitation and began to violate it with great success, ontological speculation had been so neglected that its revival inside science could not even be recognized. Reichenbach observes that "the development of science has . . . led away from Kantian metaphysics,"[2] and so it has. However, "metaphysics" (or epistemology), as Kant defines it, takes on a very special and limited form, so that only one not familiar with the range of ontological analysis prior to Kant could fail to see that a movement away from Kant would be a revival of the respectability of classical, direct, ontological speculation.

Hempel illustrates one aspect of this release of the mind from the confines imposed by Kant when he states that "the fact that these different types of geometry have been developed in modern mathematics shows clearly that mathematics cannot be said to assert the truth of any particular set of geometrical postulates."[3] According to Kant, the mind is forever fixed in its perspective, unable to consider any system of geometry other than that closest to the empirical world. Now it becomes evident that the mind can deal naturally with alternative abstract structures and relations which are merely possible. It considers these without necessary relation to the sense world and locates the traditional geometry not as the mind's fixed perspective, but as one among many systems which it is the mind's prerogative to contemplate. Thus freed from any necessary attachment to the sense world through the reversal of Kant's limited view of the range of mathematics, philosophy can again return to ontological pursuits.

It is, then, to the increased dependence of science upon highly intricate, non-direct, and non-empirically related mathematics that philosophy owes this shift in perspective and the freeing of the mind from its own introspection. As mathematics replaces direct observation in area after area, philosophy cannot help but realize that it need not restrict itself to the sense world before it. Abstractness is again acceptable, since "mathematics, because of its very abstractness, must always remain one of the most important topics for thought"[4] and "all science as it grows toward perfec-

[2] Reichenbach, Hans, "The Philosophical Significance of the Theory of Relativity," in *Readings in the Philosophy of Science*, ed. by Feigl & Brodbeck, New York (Appleton-Century-Crofts, 1953), p. 208.

[3] Hempel, Carl G., "Geometry and Empirical Science," in *Readings*, ed. by Wiener, p. 45.

[4] Whitehead, A. N., "The Abstract Nature of Mathematics," in *Readings*, ed. by Wiener, p. 4.

tion becomes mathematical in its ideas."[5] When Whitehead goes on to say that "the first noticeable fact about arithmetic is that it applies to everything,"[6] it is easy to see why an increase in importance of mathematical thought might lead to a revival of classical ontological endeavor. For Whitehead's phrase is very close to Aristotle's traditional definition of "first philosophy," that it considers no particular science, but rather the aspects which apply to everything in existence. The generality of mathematics suggests that philosophy also has the right to return to a consideration of the ontological categories of being, which also are said to apply to any existing entity whatsoever.

Since mathematics deals with hypothetical states of things, philosophy sees that it may speculate about possible worlds without necessary absurdity. Since, as Peirce says, another characteristic of mathematical thought is "the extraordinary use it makes of abstractions,"[7] the abstractness of thought can no longer be in itself grounds for complaint. As long as science remained naively simple in its factual, observable, empirical outlook, speculation and abstractness had to buck the prestige of science. Today we are faced with the irony that the most radically speculative and abstract minds are to be found in the sciences, but the value of this shift for philosophy is that it may now also become speculative without reproach.

3. Do Problems Appear Dressed Only as Language, Logic, or Mathematics?

One of the difficulties in gaining the release of philosophy for a return to its original area of speculative problems is that many admit the return of abstractness to science and mathematics but do not allow a parallel shift within traditional philosophy. Philosophy had so long abandoned its speculative side that what tended to happen with the revival of the abstract and the hypothetical was that, when philosophy was forced to abandon its recent sense empiricism, this seemed to leave it with nothing to do according to its traditional conception. Due to the dormant status of the speculative tradition in philosophy, what might have led to a rebirth of the classical function of philosophy led only to an abandonment of Kantian metaphysics and recent sense-data analysis, leaving philosophy with apparently no content. Philosophers continued to exist, and so all theoretical and abstract problems which appeared

[5] *Ibid.*, p. 6.

[6] *Ibid.*, p. 4.

[7] Peirce, Charles S., "The Essence of Mathematics," in *Readings*, ed. by Wiener, p. 12.

were called problems in language, logic, or mathematics, as if this exhausted philosophy's range. Thus, the secret of the fascination for young men in the movement toward philosophy of science is that it allowed liberation from pedestrian problems of sense data and provided an excursion into the fascinating realms of abstraction and speculation. The challenge experienced here was the same that ontological questions have always evoked, but it was not recognized as such, due to its exclusive treatment under the guise of questions of language or mathematics. Under the name of logic, contemporary philosophers have found in modern dress the same fundamental problems which traditionally made philosophy attractive to subtle and abstract minds.

Carnap readily admits the heavily abstract side to current philosophy of science, but he deals with this by phrasing the issue in terms of language.

> The acceptance of a linguistic framework must not be regarded as implying a metaphysical doctrine concerning the reality of the entities in question.[8]
>
> Thus the question of the admissibility of entities of a certain type or of abstract entities in general as designata is reduced to the question of the acceptability of the linguistic framework for those entities.[9]

Now this attempt to answer the question raised through the use of abstract entities which turns the issue into a matter of language is an interesting solution to consider. But it can only be taken as solving the problem if one admits that phrasing the issue as a matter of language is the only way of handling the problem. On the other hand, if we admit that the same problems may appear in a number of contexts, then to treat any issue within one domain is not necessarily to exclude the possibility of dealing with it in other ways. Abstraction is a question for someone interested in language (of course, there is no single view of the nature of language either), but the same question of the status of abstract entities also arises in both logic and traditional ontology. To say that something is a linguistic question does not prevent it from remaining a question for other areas of interest, although certainly no particular individual is forced to deal with a problem in any way he does not care to.

If, then, a problem may legitimately be treated in more than one way, all traditional problems remain, as well as problems of language, unless one accepts the reduction of all arts to language, as the medievals attempted to reduce them to theology. If we cannot

[8] Carnap, Rudolf, "Empiricism, Semantics, and Ontology," in *Readings*, ed. by Wiener, p. 517.

[9] *Ibid.*, p. 519.

accept this reduction, then, as von Mises observes, "every [philosophical] point of view is still represented today."[10] Nagel also objects to treating the question of abstraction in any other than a logical framework,[11] but this implies an essentially Hegelian view of the nature of logic; that is, that logic is no longer a small though respectable area of philosophy, but instead becomes the very heart of philosophy, including within it all of philosophy's traditional considerations. Under the name of logic nearly all of the basic speculative problems of philosophy have been recently reintroduced. If we can agree that logic is only a part of philosophy and not the whole, as it tends to be for Hegel, then there is no reason why we cannot return to an interest in questions derived from the ontological tradition from Plato to Spinoza to the present.

What we need is a return of generosity so that we admit that a problem can be approached from a number of directions, logic and language being only two, with each approach considered on its merits without insisting that it be taken as the whole of philosophy. If logic is used as a general name for all kinds of problems, it becomes too loose a term to be useful. For instance, "time" is a central concept for modern physics, and yet why must physics be thought to be the only meaningful context within which to consider time? Why can't we read Bergson or Augustine on time and see that they approach time differently, without denying physics its right to deal with time as a concept important to physical relations? The attempt to make the scientific use of concepts the only acceptable usage fits with early scientific narrowness and optimism. Interestingly enough, the philosophers who follow science are less generous here than many modern scientists are today. When Reichenbach speaks of the implications of modern physical views, he says, "relativity does not mean an abandonment of truth; it only means that truth can be formulated in various ways."[12] Yet the full implications of this modern scientific view ought to be that "time" may be treated as a classical ontological problem without contradicting the truth of the physicist's analysis of time within his framework. Relativity ought to be applied to science itself in relation to philosophy, as well as being applied inside science.

What seems to have happened is that the interesting theoretical developments which have taken place in mathematics have caused some to try to turn philosophy into mathematics in order to take

[10] Von Mises, Richard, "Causality and Probability," in *Readings*, ed. by Wiener, p. 508.

[11] Nagel, Ernest, "The Meaning of Reduction in Natural Sciences," in *Readings*, ed. by Wiener, pp. 546–547.

[12] Reichenbach, Hans, "The Philosophical Significance of the Theory of Relativity," in *Readings*, ed. by Feigl & Brodbeck, p. 200.

part in these exciting controversies. Instead, what should happen is that mathematics, if it has burst the confines set upon it by Kant, should encourage philosophy to renewed interest in its own speculative problems, giving them a treatment independent from mathematics and in line with philosophy's own proper tradition. The question is whether what has become legitimate speculation beyond the confines of sense experience should now be allowed within philosophy, so that one need not become a scientist or mathematician in order to obtain a license to do speculative work. We seem agreed that science is not only empirical but contains its formal side, too, and the formal is usually identified with the mathematical. If by formal we mean not directly empirical, why cannot philosophy have a formal aspect found in ontology as well as in logic?

Peirce says that "modern mathematics is replete with ideas which may be applied to philosophy,"[13] but philosophers contribute nothing uniquely their own if they turn themselves into mathematicians in order to make use of these suggestions. Fundamental problems have more than one life, so that the discovery of a problem within mathematics does not mean that this is the only form in which it can appear. Carnap asks, "Are there properties, classes, numbers, propositions?,"[14] and this is a question of interest, as he suggests, to mathematicians and logicians of language; but they do not have exclusive claim to it, since this question is precisely a central concern for classical ontology, too. Nor can they argue that philosophers of science can deal with the question "more successfully," since success is a concept relative to the framework of inquiry, and men are interested in the ontological structure of their world as well as in mathematics and language. To be successful in one area is not necessarily to solve all of man's problems, unless you can prove that all questions really reduce to one form, and this cannot be done merely by showing that all questions may be translated into your preferred form, since we are not all agreed to allow this translation in the first place.

4. The Problems of Classical Ontology and the New Generosity of Scientists

It is not easy to make sense of Plotinus and Spinoza, so that when one suggests dealing with such problems as "time" in ontological terms the reply which is given is bound to include the term "vague." Ontology and theology are strict disciplines with

[13] Peirce, Charles S., "How Mathematics Generalizes," in *Readings*, ed. by Wiener, p. 6.

[14] Carnap, Rudolf, "Empiricism, Semantics, and Ontology," in *Readings*, ed. by Wiener, p. 510.

rules of clarity of their own, but when the discipline has been so long neglected, it is not easy to revive this training or to make others see the rigor which it can have within its sphere. Those who reject the ontological side of the problems which science has again brought to the foreground often do so because they simply do not recognize an ontological problem, so neglected has this area been. Thus, the first step in this revival is to try to make clear what kinds of problems ontology deals with. In Kant's day ontology was surely not neglected simply because no one understood it, but rather due to Kant's scepticism about the speculative powers of reason. In our day, with science showing a new willingness to indulge its speculative bent, our problem is not so much confidence as it is an understanding of what the traditional speculative problems are and a suggestion as to how one goes about dealing with them, a skill which is to be learned through historical study.

Poincaré speaks for science when he says that "hypothesis . . . has a necessary rôle that no one has ever contested,"[15] and Reichenbach will support the unrestrictive speculation of the scientist, too: "The physicist who is looking for new discoveries must not be too critical; in the initial stages he is dependent on guessing, and he will find his way only if he is carried along by a certain faith which serves as a directive for his guesses."[16] If we allow this range to the scientist, why shouldn't we set the philosopher free from the strictures of Kant and the empiricists, provided that we can succeed in reëstablishing our skill for the ontological way of research into the first principles of things? Physicists talk freely of the theoretical world *versus* the real world. Why should the philosopher be any more reticent in speaking of possible or ideal worlds, since such a contrast of ideal and possible seems to have become respectable again? While philosophers are still talking only about language, scientists seem to have forgotten about the supposed unknowability of the external world and to be talking directly about the world and its structure. If such direct consideration is possible, and if to speak of the basic structures of the world is also ontology's task, why should we confine ourselves to only a discussion of language? If, as Einstein says, "to put it boldly, it [science] is the attempt at the posterior reconstruction of existence by the process of conceptualization,"[17] why should

[15] Poincaré, Henri, "Hypotheses in Physics," in *Readings*, ed. by Wiener, p. 36.

[16] Reichenbach, Hans, "The Philosophical Significance of the Theory of Relativity," in *Readings*, ed. by Feigl & Brodbeck, p. 197.

[17] Einstein, Albert, "Science, Philosophy and Religion," in *Readings*, ed. by Wiener, p. 603.

philosophers trust their abstract powers any less? If the day of strict empiricism and the denial of speculation are past, philosophers ought not to be the last to cling to them.

However, if the classical ontological problems have been so long ignored, just exactly what are they, so that we may by comparison observe their similarity to modern scientific concepts? Unity and plurality, the one and the many, possibility and necessity, causality, certainty, time and space, universal and particular, being and becoming, life and mind, the real and the theoretical—all of these are problems with a distinguished history in traditional ontology. Granted that contemporary scientists speak in different ways about these concepts, the important point is that their prominence in current discussions ought to make possible an analogous revival in ontological discussion. Ontological analysis will not reduce to the scientific, nor scientific to ontological, but there is no reason why both should not go on, as long as the subject is established as respectable in spite of Kant and the empiricists.

For instance, when Poincaré says that "every generalization implies in some measure the belief in the unity and simplicity of nature,"[18] he reveals that the contemporary scientific interest in unity as a concept is almost as strong as that of Plotinus. When he goes on to say that "sometimes simplicity hides under complex appearances; sometimes it is the simplicity which is apparent, and which disguises extremely complicated realities," it reads like the opening passages of Plato's *Philebus*, where Plato describes the relation of philosophic reason to the structure of things and the origin of speculative power. Science as well as philosophy operates by finding the unity in the plurality and the plurality in the unity. These concepts are as important, and as legitimate, in philosophy as in science, and we need to become aware again of their long philosophical history. No man should be admitted to philosophy until he can interpret Plato's *Parmenides* and discuss the problem of the one and the many in philosophically rigorous terms.

Hempel says that the distinctive characteristic of mathematics is "the peculiar certainty and necessity of its results,"[19] but mathematicians are not the only ones interested in these crucial concepts. Aristotle and others were fascinated by them, so that one need not become a mathematician in order to find a context in which to discuss the nature of necessity. When Hempel ends by

[18] Poincaré, Henri, "Hypotheses in Physics," in *Readings*, ed. by Wiener, p. 34.

[19] Hempel, Carl G., "Geometry and Empirical Science," in *Readings* ed. by Wiener, p. 40.

quoting Einstein as saying that "as far as the laws of mathematics refer to reality, they are not certain; and as far as they are certain, they do not refer to reality,"[20] it is evident that both science and mathematics are absorbed in the problem of the relation between these two worlds and consider it legitimate for the mind to operate in two worlds simultaneously. Before the time of empiricism, philosophy's problem was also set by such an opposition of two levels of being, so that if science cannot live without two worlds, philosophy ought also to be able to return to its speculative contrasts of ideal and real, the possible and the actual worlds.

Reichenbach says that Einstein's discovery was to see that "certain physical problems could not be solved unless the solutions were preceded by a logical analysis of the fundamentals of space and time."[21] If this is true, perhaps what philosophy needs is to ignore Kant's warning not to speculate about space and time as such, but to launch instead into a new philosophical analysis of space and time. Contrary to some current desires, we cannot borrow science's analysis, but must carry out our own on principles derived from the philosophical tradition. Gamow tells us that "the problems of cosmogony—that is, the theory of the origin of the world—have perplexed the human mind ever since the dawn of history,"[22] and Heisenberg agrees that the physicist wants to understand the origin of things and has the centuries old desire to do this through a unified principle.[23] The answer which each science gives to the problem of cosmogony is interesting for that particular area, but, if this search is being revived in spite of Kant, then philosophy has an obligation to provide its own particular analysis.

When Schlick states that "change itself must be rendered intelligible by the discovery in it of the unchanging, or invariable—and for this purpose, the concept of law is necessary,"[24] this is a sentence which might just as well have come out of Plato's discussions of the relation of being and becoming. It makes a classical philosopher smile with nostalgia to see the Platonic problem of "participation" being discussed again with such enthusiasm, since it is just this ancient problem which must be solved if the relation

[20] *Ibid.*, p. 51 (quoting Albert Einstein).

[21] Reichenbach, Hans, "The Philosophical Significance of the Theory of Relativity," in *Readings*, ed. by Feigl & Brodbeck, p. 196.

[22] Gamow, George, "The Creation of the Universe," in *Readings*, ed. by Wiener, p. 97.

[23] Heisenberg, Werner, "Fundamental Principles of Present-Day Atomic Physics," in *Readings*, ed. by Wiener, p. 89.

[24] Schlick, Moritz, "Description and Explanation," in *Readings*, ed. by Wiener, p. 471.

of the theoretical to the actual is to be understood. But if modern scientists speculate so freely and sincerely about such classical ontological concepts as unity and time and the participation of the ideal in the real, why should the philosophers be the only ones left in the purely empirical house which they so carefully built for the sciences to occupy? If the philosopher would only move outdoors as freely as the theoretical scientists have done, not aping science but reëstablishing the philosopher's own speculative tradition, he might no longer have to rent concepts from science in order to find excitement.

FREDERICK SONTAG

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NOTATIONS ON G. H. MEAD'S PRINCIPLE OF SOCIALITY WITH SPECIAL REFERENCE TO TRANSFORMATIONS

THE principle of sociality, which I am discussing here, was presented in its most comprehensive form in Mead's Carus Lectures[1] of 1930. Close friends have voiced the opinion that Mead's untimely death, which brought an end to the adventurous thought of "a seminal mind of the first order," likely prevented further clarification of this significant concept. In any case, since there are numerous references to the concept throughout Mead's work, I believe that we are justified in examining a principle which was meant to constitute the framework of Mead's systematic philosophy.

I am suggesting that sociality may be regarded as a "root metaphor," which Mead proposed to validate by showing that it appeared in "the three recognized systems of organized perspectives."[2] The pervasiveness of "root metaphors" must, of course, be supported by evidence. Mead's principle is plausible enough at the psychological level. There it becomes a popular theory which may be applied to the problem of the genesis of the self and society. Will it apply, however, to the whole of nature?

Since Mead finds sociality evidenced in the physicist's transformations, I wish to examine the principle of sociality in relation to the question: What is involved in the use of transformation formulae? I shall assume that the reader is aquainted with Mead's analysis of the act and the cluster of ideas such as emergence,

[1] Mead's Carus Lectures constitute Chapters One to Four in *The Philosophy of the Present*, Chicago, 1932 (hereafter *P.P.*). Other references to sociality and relativity are found in *The Philosophy of the Act*, Chicago, 1938 (hereafter *P.A.*).

[2] *P.A.*, p. 606.

passage, and process, which supplement each other and reflect the unique orientation of his thought.

I

Mead's theory of perspectives is the outcome of an "unexpected donation by the most abstruse physical science to philosophy" [3] which he "pick[ed] out" of Whitehead's interpretation of the theory of relativity. The foundation of Mead's doctrine is the analogy drawn between the social character of mind and the processes of nature. When perspectives and passage are taken seriously, it is understood that there are aspects of nature that succeed each other in the same manner as they do in thought. Mead's view is that "mind is able to organize them [perspectives] through a mathematical doctrine growing out of [the] transformations found in the development of the theory of electromagnetism." [4]

Although Mead wishes to apply the principle of sociality to all levels of nature, it is from the physical realm that he elicits the "extreme example of sociality" which serves as the basis of his theory. Mead assumes that an increase in the mass of a moving body is an instance of sociality. A body in motion will have its own space, time, and mass which will be different with reference to any system relative to the one in which the body is considered to be moving. Consequently, a body has an indefinite number of measurements in the process of determining the "what it is" which becomes the mark of the object's reality. A body may simultaneously occupy several systems and thus acquire the characteristics that arise as the result of the measurements taken within these varied perspectives. According to Mead, modern relativity has inverted the "reality reference" by implying that visual perspectives are not related to contact experience as is the case in Newtonian relativity. For Mead, references to reality are dependent upon the motion of distant objects and the opportunity of employing transformation formulae.

In Newtonian relativity, with its absolute values, the observer has the choice of shifting from one system to another, although the relative positions and characters of the objects remain the same with reference to the system selected. While the Newtonian observer has the choice of systems, he is not permitted to occupy more than one at a time. In the modern theory, as Mead understands it, the observer must have recourse to each of the systems

[3] *P.P.*, p. 163.
[4] *P.A.*, p. 608.

at once in order to account for the "what it is" of the object, since "the mass of the moving object increases in the system at rest, and this involves the different spatial and temporal coefficients of the other systems."[5] From this interpretation of modern relativity theory Mead takes his point of departure. He suggests that the analysis of nature requires the principle of sociality, since an object is defined in accordance with formulae which express the results of simultaneous membership of an event in different systems.

Mead assumes that the methodological problem of defining the "what it is" of a body must be solved within the field of experience. For this reason, Mead considers transformations a means of retaining his basic empiricism. In Newtonian physics, the "what it is" of a body is regarded as there in advance of the system into which the object enters. In other words, the reality of a body is the result of an abstraction from its relations. But for Mead, in "perspectives we seem to pass beyond the range of their perceptual resolution in the field of contact experience."[6] Hence, we are required "to bring them into accord by transformations."[7]

How is a doctrine of transformations related to the principle of sociality? Transformation, for Mead, represents one instance of the capacity of being in more than one system. This capacity is considered central to the theory of relativity. It also defines Mead's concept of sociality. There are two dimensions of sociality; one is temporal and the other is structural. These dimensions are found in the processes of mind and nature. In mind, the temporal dimension is represented by the passage from one perspective to another. The structural dimension is present in the whole which is the organization of perspectives. In nature, the temporal aspect is characteristic of the passage from one system to another; e.g., in emergence there is a change from the old to the new. The structural feature of sociality in nature is indicated by the retention within the new of certain qualities of the old. Although sociality and transformations seem to possess common dimensions the question is: Are these genuine features of transformations?

It is the process of mind, in its social dimension, that provides Mead with the mechanism of correlation. For Mead, intersecting systems do not, in themselves, possess a constitutive principle. A world without emergence or privileged frames of reference is a Minkowski world of events. Mead refuses to believe that an "hypostasized structure of logical entities satisfies our desire for

[5] *P.P.*, p. 63.
[6] *P.P.*, p. 57.
[7] *P.P.*, p. 57.

an absolute reality."[8] Hence, an extra-experiential order of reality is rejected. Rather it is organic behavior in relation to the perceptual world which establishes the locus of reality. Order is introduced into nature through the selectivity of minded organisms.

The fundamental characteristic of mind is its capacity to "enter into" various perspectives; i.e., the organism is capable of taking the attitude of other individuals. For example, a man in a moving train may "enter into" the attitude of a man on the station platform. In these transformations or excursions of the mind, from one system to another, the derived constants are not entities outside possible experience. They are the organized character of the common world. Objects that are identified in several systems answer to the meanings or attitudes which are organized with respect to varied points of view. When an individual indicates an organized meaning to himself and thus takes the role of the other, he is regarded as occupying the perspective of the other. The determination or the "what it is" of an object represents a common meaning which is universal in import. What the universal content refers to is the adjustment which takes place in the process of the organization. The adjustments, which are equated with the passage of nature, answer "to the passage in the transformation in the mind of the mathematician; and it is to this situation that the constants that shake out of the relativist's calculations refer and not to a Minkowski world lying beyond any possible experience."[9]

In the physical theory of relativity transformations are metric equations. Whether they represent a process of role-taking is the question under discussion. It is Mead's view that the technique of transformations resides in the mental process of taking the attitude of the other. The correlation of perspectives is a function of the individual whose conduct involves the selection and organization of alternative responses. Alternative modes of response are "held" by the organism pending the selection of the one that will free the act from its inhibited state. Each perspective is a "slab of nature" and, although all may be necessary for a theory of the whole, they do not fit any structure which might be termed an absolute. In place of an absolute structure organization results in universals which are comparable to the constants that "shake out" of the mathematician's transformations.

We have shown that Mead's "extreme example of sociality" referred to the physical measurement of mass. The final justification of the principle, however, relates to the process of mind. Al-

[8] *P.P.*, p. 154.
[9] *P.A.*, p. 609.

though Mead wished to show that sociality is characteristic of all levels of nature, I believe that the concept may be applied to the inorganic only with difficulty. An examination of Mead's doctrine of emergence should support this contention. An emergent, of course, bears the mark of sociality.

Is there a consistent definition of emergence in Mead's position? Let us look at a few passages. In one place he writes: "Our statement in terms of emergence simply puts it as a resultant and does not give it any relationship to the process out of which it arose."[10] A simple illustration of this mode of emergence would be water which results from the combination of certain proportions of oxygen and hydrogen. Do the temporal and structural dimensions of sociality apply to this event? We also find this view: "The perspective emerges out of the relation of the percipient and the perceived and is as objectively there as anything can be."[11] And again: "These characters emerge out of the relation of the sentient organism to its environment."[12] An illustration of these latter forms of emergence would be any type of interaction between an organism and the world it encounters.

On the whole, I believe that Mead's use of the term emergence involves relations. Furthermore, I suggest that emergence (and sociality) considered as relational provide the only successful basis for Mead's doctrine of transformation which is the mechanism of role-taking. For this mechanism, which is the mind's capacity to "enter into" various systems, is not an intuition; it is rather a form of objective behavior and is thoroughly suited to a relational point of view. However, if sociality is relational and is linked with a doctrine of transformation the question becomes: Does sociality characterize all levels of nature? How is this question to be answered in the affirmative if there is the possibility of a non-relational mode of emergence?

II

In order to provide a basis for the assessment of Mead's interpretation of transformations I should like to discuss several points.

(1) A mathematician regards a transformation as the setting up of a correspondence between the points of figures in a system of coördinates. For example, in a system of Cartesian coördinates,

[10] *P.A.*, p. 641.
[11] *P.A.*, p. 281.
[12] *P.A.*, p. 281.

the points x, y, z, may be transformed through rotation or translation into x', y', z'. In the simple transformation of rotation the length of a line remains invariant. If the mathematician is interested in invariance, and this is usually true, then he will select a transformation that will guarantee this result. Other results, however, are achieved by using different types of transformations. An *affine* transformation translates a straight line into a straight line or a plane into a plane. With *topological* and *projective* transformations other forms of correlation are achieved.

What has been done in the act of transformation? The mathematician wishes to make a calculation. He, therefore, assigns values and postulates axioms. In other words, modes of operation are delegated. What is the parallel between this type of exercise and Mead's principle of "entering into"? Is there more in the act of transformation than the decision of the observer to consider, for the purposes of calculation, an event E from the point of view of system S' rather than system S? It seems to me that Mead is wrong when he maintains that "relativity reveals a situation within which the object must be contemporaneously in different systems to be what it is in either."[13] What relativity reveals is that systems of reference possess an independent reality and that events falling within any system may be assigned intrinsic values through the granting of invariant properties and the construction of a relevant terminology. In other words, the conditions for definition are given prior to the transformation.

(2) With reference to the mechanism of role-taking the question is raised: How completely do we "enter into" the attitudes of others? Daily experience seems to indicate that we achieve the attitudes of others only with difficulty. How often do we express the sentiment that we are "out of touch" with an individual or a group? There are always areas of conflicting opinions even in the most thoroughly integrated society. Hence, the "entering into" of any perspective by an individual is incomplete. Role-taking is neither intuitional nor mystical. Perspectives are always objective and empirically derived. The adjustments, which mark out an instance of sociality, and the meanings, which Mead suggests are the universal aspect of organized perspectives, are likewise objective. Thus the content and the form of the organized structure are behavioristic and perceptual in import. Does the capacity to "enter into" a perspective mean more than perceptual experience? Will mere repetition of perceptual presentation account for the organized content?

[13] *P.P.*, p. 63.

Organization implies formalism. With respect to this point, Mead's doctrine of role-taking does not compare favorably with the mathematician's transformation. For one thing, Mead's method requires a body of rules and definitions. These would make correlation intelligible. Such a logical system would provide the positive framework of intelligibility without creating a dialectic foreign to his general orientation. Without a logical structure, commensurate with the formalism of the relativist's equation, Mead's descriptive-empirical analysis of phenomena lacks a constitutive principle. It is not enough to borrow the leading ideas and techniques of relativity theory without formulating a logical system designed to satisfy the operational needs of Mead's analysis of the act. Mead's position is an original and consistent empiricism, in the sense that he resists all metaphysical attempts to "save" the reality of appearance. His problem, however, seems to be that of reconciling subject matter and method.

I believe the above criticism is warranted in the light of the following statement. In referring to the general theory of relativity Mead writes: "We do not transform from one set of co-ordinates to another, but obtain expressions that hold for all possible sets of co-ordinates."[14] We must ask, therefore: In Mead's theory of organization, what are the "expressions"? I have suggested that methodological formalism is absent in Mead's view, although the basic elements of a logical structure are available in his theory of significant symbols.

(3) The methodological aim of the scientist is to "grasp" reality through concepts. Mead, however, would have the scientist remain at the descriptive level of inquiry. For the scientist, since conceptual demands are thought to be independent of the observer, there is a desire to achieve formalism which is expressed in the transformation formulae. Thus, in the logical exposition of a given formula, the observer may be eliminated. Furthermore, despite the problem of what contact there is between the formula and reality, the metric content of the equations is intellectual constructs. The logical structure of the systems is the work of reason and the empirical content finds representation only in the conclusion of the theory. For Mead, on the other hand, the content of the formulae represents adjustments which are the objective data of the situation. To a significant degree it is the formalism of scientific theory which guarantees the invariance found in correlated systems and at the same time leads the inquirer to seek simpler equations. Mead champions scientific methodology, but

[14] *P.P.*, p. 157.

at no time does he adhere to the theoretical requisites of methodology. Scientists desire generalizations. Yet Mead never presses forward in this direction, since his doctrine of organized perspectives dispenses with the formalism that would make this next step possible.

(4) Transformations, for the physicists, are made by applying formal procedures in the correlation of the coördinates of S and S'. If we assume that the equations are more than mere languages that say the same thing, we encounter another difficulty with reference to Mead's position. Let us say that metric equations are constructed to solve a specific problem, e.g., the measurement of motion. The method evolved is the result of deciding that space is traversed in a certain time. Having decided on the method of measurement, the next step is to define the terms. The product is a statement of motion in terms of space and time. Other arbitrary definitions would have served. But once space and time are decided upon, we secure a notion of a space-time "reality." Our resultant may thus be regarded as a conceptual structure and not a mere linguistic formula. Our equation represents a type of formalism and enjoys the advantages of a rational structure, namely, simplicity, aesthetic value, and the elimination of subjectivity. I am not denying that the rationalism is an end in itself. It is generally combined, however, with a desire to foster an empirical extension. But the rationalism is significant and the question may be asked: Did Mead fully recognize the *a priori* elements in the technique which he "took over" from relativity theory? Mead's theory of organized perspectives presupposes *a posteriori* principles. What is there in Mead's doctrine that is comparable to the formal properties of the mathematician's transformations?

(5) It may be shown that Mead's concept of a transformation differs from that of the physicist's in the matter of content or the "sameness" of that which is represented by the act of correlation. The mathematician tends to stress the detail of the coördinates rather than to consider fully the nature of the event which has entered into the systems. In order that the event may come under review a certain discreteness of the object must be assumed. This presents a difficult problem in Mead's position for the object and the self "emerge" in the social context and consequently their boundaries are never absolutely sharp. Mead is always faced with the problem of losing the identity of object and subject in the relationships growing out of interaction.

(6) We have seen that Mead proposes to solve the issue of the

creative advance of nature in terms of mind. But, if the aim of the relativist is the elimination of the subjective element in favor of postulated axioms, the passage in the mind of the mathematician, which is an instance of sociality, either decreases in import or represents something different from that which Mead assumes it to mean.

III

In conclusion one is moved to these reflections: (a) Mead's use of transformations has blurred several differences when set over against the technique of the mathematician. (b) Mead's doctrine would have conformed more completely with the transformations of the mathematician if he had "worked out" a logical structure containing operational details answering to the formalism inherent in metric equations. (c) Mead assumes that relativity implies plurality and the plurality is the mark of sociality. There are two misunderstandings evident in this assumption. First, "relativity" should be read as meaning relative to a system of definitions. Second, the plurality expressed in relativity theory is not so much the multiplicity of different frames of reference as that of equivalent equations. What relativity theory infers is that observations and calculations from one point of view may be made from another point of view and the frames of reference may be correlated if we know in advance the values and definitions of their terms. There is nothing mysterious about the function of transformations, and, I would say, nothing essentially social.

The results of Mead's analysis are not, however, totally negative. We must bear in mind the setting of Mead's philosophy. Through the statement of his problems we are permitted to know the ideas that were being discussed around him. Mead's thought contributed to the general "revolt against dualism" which characterized the climate of opinion in the second and third decades of this century. The theory of relativity seemed to offer new concepts to aid in the solution of the inherited problems of dualistic philosophy. Sociality, central to the thought of Mead, is only one of several philosophical problems that must be considered in the light of this important modern orientation. When more philosophers turn to relativity and recognize the wealth of metaphysical and epistemological questions inherent in it, Mead's thought will be considered as a significant contribution in this field.

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BOOK REVIEWS

Religion und Philosophie; ihr Verhältnis zueinander und ihre gemeinsamen Aufgaben. FRANZ BRENTANO. Aus dem Nachlass mit Zugrundelegung der Vorarbeiten A. Kastils herausgegeben von Franziska Mayer-Hillebrand. Bern: Francke Verlag, 1954. xxxvi, 275 p. Paper, 18.— S. Fr.; Cloth, 22.— S. Fr.

The present volume contains a number of articles and letters, of which the earliest goes back to 1899 and the last was penned in 1917. The contents fall under four general sections. The first deals with the nature of religion and philosophy and their interrelation, the second with the demonstration of the existence of a benevelent Supreme Being, the third with theodicy, and with optimism and pessimism, and the fourth concerns itself with the soul and its immortality.

Although study of comparative religion points up wide diversities and apparent incompatibilities, a typical notion of religion can be ascertained according to Brentano, if its explication is linked with a deep-rooted human need, to wit, the need for bliss (*Glückseligkeit*). But since this much sought-after serenity purportedly finds profounder realization in some religions, Brentano, after applying other relevant criteria consonant with his ideal, opines that, if choosing were necessary, one could well prefer Christianity to all the others. And this, too, because of its monotheistic doctrine, its ethic, and an elaborate ecclesiastical organization (*vermöge einer augebildeten geselligen Verbindung*). Empirically, therefore, it is the religion most faithful to his ideal type.

Implicit agreement obtains between these attributes of Christianity and the other criteria, both theoretical and practical. The former are obviously of interest to philosophy, which Brentano identifies with wisdom. The tendencies and aspirations nurtured in the higher genres of religion essentially correspond to those which give meaning and guidance to philosophy. Indeed, in a significant sense, past and present religions have collectively served as surrogate for the exercise of wisdom.

Study of philosophy, and expression of this wisdom, largely revolves around God and His relation to the world and His creatures. Discussion of those themes recurs. Characteristic of Brentano's argument is his claim that philosophy surpasses all other sciences in theoretical interest in that it aims at acquiring a knowledge of the first Cause of the universe, an infinitely perfect and *in se* necessary Being (p. 17). On page 131 he says: "*Gott ist der Schöpfer der Welt und nicht nur allmächtig, sondern auch in Hinsicht auf Intelligenz und Güte das vollkommenste Wesen.*"

Such knowledge clarifies the meaning of all existence and especially illuminates the significance of the human sojourn on this planet.

In the opinion of this reviewer, the unfinished essay (written on May 12, 1916, about ten months before Brentano's demise), *Die Weisheit, ihr wissenschaftlicher Charakter, ihr Gegenstand und ihre Aufgaben im einzelnen,* is the most critical one concerning these matters. There Brentano sketchily seeks to reconcile his general method, i.e., the reliance on inner perception and insight in the apprehension of evident knowledge, with the acquisition of the knowledge of God. He argues that insofar as its object relates to the First Cause, or God alone (Theology), wisdom is an expression of *Einsicht.* On the other hand, the scientific aspect of wisdom has its object in the relation of the knowledge of God to the deducible knowledge of created things, which things are not immediate and necessary realities in themselves (Cosmology).

But neither do we know the first Cause, the *in se* necessary Being, immediately, since our apprehension of God is nowhere given in perception or immediate experience. It would therefore appear that the insight through which God's existence is affirmed for certain first gains its object only after a more mundane knowledge has been acquired, a knowledge which includes antecedent *a priori* insights of a less exalted brand. How? This is Brentano's explanation: Beginning with immediate self-knowledge, inner perception shows us to be in possession of axioms springing from elementary factual knowledge and representations. These axioms are all negative in quality, and rule out as impossible certain simple combinations of ideas (such as the proposition that it is impossible for an act of judgment to take place without an act of representation). Concerning more abstract kinds of ideation, semantical and definitional problems arise which the theologian must handle. The result at this stage will be a number of propositions comprising axioms, definitions, and a list of factual truths, required as the first part in preparation for the attainment of wisdom.

From this body of judgments, conclusions follow which are particularly relevant to theology (such as those concerning absolute and relative necessities). These last fall into two classes: (a) those having the *a priori* negative character of mathematical premises and theorems; (b) those that comprise positive knowledge, and which are the outcome of a union of immediate factual perceptions and axioms (p. 102). Manifestly, it is only after the mind has acquired and ordered such knowledge that a consequent insight guarantees the existence of the Deity.

Concretely, the arguments employed by Brentano to demon-

strate God's actuality are largely a repetition of those found in *Vom Dasein Gottes*. Of the traditional demonstrations Brentano favors Leibniz's argument based on the experience of contingent things—not just on the experience of things. His own unique contribution involves a demonstration purporting to show that an absolute accident—by which he means an event whose occurrence supposes no necessary preconditions, to wit, neither immediate nor mediate necessary existences—is impossible. This he professes to demonstrate by allegedly reducing the assertion of its possibility to an absurdity. If you grant the possibility of an absolute accident, then you must be prepared to admit that the probability of its occurrence at any moment is at least equal to the probability of its non-occurrence. Nevertheless it is certain that no such abrupt change comes off in an infinite plurality of temporal moments. The argument that instances of accidents are predicated on, and limited by, the occurrences of certain particular conditions leading to their eventuation (as some have held in the case of free will), is easily refuted. These real determinations must have some duration—however small. They therefore either admit of no change, or must vary in an infinitesimally continuous manner. And this continuity purportedly defeats any radically abrupt change.

Again, the necessity or accidentality, respectively, attributed to the whole, must be derived from the necessity or fortuitousness of its constituent individual members. So that the model quality of the actual here-now event ultimately determines the necessary or accidental status, respectively, of the whole. But Brentano lays it down that each member is completely characterized by a relative necessity, in virtue of its relation to its predecessor. Hence no member of the series provides any ultimate basis for attributing *Zufälligkeit* to the whole series: "Wegen der relativen Notwendigkeit jedes Gliedes in bezug auf die vorausgehenden ist aber in keinem etwas gegeben, was auch nur zum kleinsten Teil den letzten Grund der Zufälligkeit der ganzen Reiche abgäbe" (p. 123).

He concludes that the assumption of accidental existence from all eternity leads to a contradiction. Here, after adding further refinements, Brentano confidently asserts the existence of God, and the proof thereof.

He defends the handiwork of this all but perfect Creator by acquitting Him of all responsibility for the sins of the sinner. Evil there is, but should the non-existence of the world then be preferred to its existence? A categorical answer would resolve the conflict between pessimism and optimism. Brentano, of course,

is for optimism and meliorism. Howbeit, his optimism is somewhat embarrassed when—after long maintaining that the bad is only relative to, i.e., parasitic on, the good—he at length opines that optimism becomes compromised when it asserts nothing can be conceived as absolutely or *in se* bad.

The investigation of the psychical and its relation to the physical is carried on by the author's general method of inner perception. With it Brentano rejects both extreme materialism and spiritualism, occasionalism, psychophysical parallelism, and epiphenomenalism. He favors the theory of interaction.

By that same method he endeavors to show that the subject of mental acts must be a non-physiological, non-dimensional substance. Part of the argument comes from Aristotle. But even a sensible act necessitates an unextended subject. As distinct from its simplicity, the unity of consciousness implicates its acceptance. Moreover, when one is aware of his own conscious states, the assertoric evidence here reported by inner perception testifies to its existence. This it does by immediately perceiving a relative necessity, a relation of identity between the knower and the known.

The soul (the spiritual substance), though it interacts with the body, was probably either produced with, or created at a determinate moment in, the development of the body. And since it is incorporeal it does not disintegrate with the dissolution of the body.

Brentano in the end convinces himself that the eternal duration of the soul (*den ewigen Fortbestand des Geistes*) is a certainty (p. 245)—a conclusion in accord with theism and optimism. He, however, advocates the doctrine of pluralism as most consistent with this theocentric philosophy, a philosophy which perhaps comes close to being a sermon.

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L'esistenzialismo positivo di Giovanni Gentile. VITO A. BELLEZZA. Firenze: G. C. Sansoni, 1954. 192 pp. (Giovanni Gentile, la vita e il pensiero, a cura della Fondazione Giovanni Gentile per gli studi filosofici. Vol. VI.) L. 2000.

The above volume is important for at least two reasons. First, it is indicative of the continuing vitality of the recent existentialist trend in Italy; second, it is evidence of the enduring influence of the late Giovanni Gentile on Italian philosophical thought. The author, who studied under the latter at the University of Rome and who has since published the most complete bibliography of the Gentilian writings which exists to date, is typical of the growing

number of *gentiliani* who have some to bury their *maestro* as Fascist in politics and resurrect him as "actualist" in philosophy. This *post mortem* homage to Gentile the philosopher has become so noticeable in Italy of late, particularly at the last two or three annual meetings of the Italian Philosophical Society, that the present work must be regarded as another instance in black and white of the same phenomenon. If Dr. Bellezza keeps it up, he will surely acquire the reputation in post-Fascist Italy of being Gentile's Bulldog.

The author arrives at his existentialistic interpretation (*ante litteram,* to be sure) of Gentile's philosophy from three chief sources: Nicola Abbagnano, Luigi Pareyson, and Gentile himself. From Professor Abbagnano, who calls his own philosophic position for polemical reasons "positive existentialism" (to contrast it with the "negative" species attributed to the German and French versions of the movement), Bellezza gets the new label he attaches to Gentilian actualism. From Professor Pareyson's *Studi sull' esistenzialismo,* published in 1943, he learns that the Gentilian form of neo-idealism prepared the ground for the development of Italian existentialism, being in fact responsible to a great extent for its distinguishing trait, namely, "a sense of values" accompanied by an unusual sensitivity to *normative* considerations in dealing with the problems of men. And, finally, he knows from Gentile's contribution to the historic debate on "Existentialism in Italy," published during the same year in the Italian literary journal *Primato,* what his teacher thought of the movement, to wit, that its "better part" had already been expressed by Italian philosophy, especially through "concrete, actualistic idealism."

Nevertheless, in spite of all the historical connections which can be made between the actualistic philosophy and positive existentialism, and in spite of all the meticulous documentation which the author brings to bear on the subject, there remains a significant difference in horizon between the two positions. A technical way of stating the difference is, briefly, as follows: Whereas the fundamental category of Gentile's logic is "the actual" (in the sense of the historically *real*), the fundamental category of Abbagnano's logic is "the possible" (in the sense of the historically *realizable*). And whereas the negative of the *attuale* for Gentile is the *inattuale,* meaning the logically possible but historically impossible, the negative of the *possibile* for Abbagnano is the *non-possibile,* that is, the non-realizable, which is not only logically possible but historically as well.

It is curious but revealing that Bellezza's interpretation of Gentile makes use of practically all the categories of positive

existentialism except the basic one: *the possible* and its negative, *the non-possible* (not to be confused with the impossible, which is really the negative of the necessary). The reason for this serious omission should be obvious: A consistent actualist like Gentile could not be a consistent possibilist like Abbagnano without contradicting himself. Therefore, the author's thesis that positive existentialism "is nothing but the actualism of Giovanni Gentile" (p. 6), however ingenious, is at bottom mistaken and exaggerated.

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CORRECTION

Mr. G. E. L. Owen of Corpus Christi College, Oxford, will be Visiting Professor in Philosophy at the University of Pennsylvania for the fall term, 1956–57. It was erroneously announced in our issue of August 2, 1956, that he would be Visiting Lecturer.

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